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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/032,200	12/21/2001	Michel Deeba	4007	4939

7590

04/09/2003

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EXAMINER

TRAN, BINH Q

ART UNIT

3748

PAPER NUMBER

DATE MAILED: 04/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/032,200	DEEBA, MICHEL	
	Examiner	Art Unit	
	BINH Q. TRAN	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
     If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:  
         1. ☐ Certified copies of the priority documents have been received.  
         2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
         3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
     \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
     a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

*Claims 1-5, and 13-21 are rejected under 35 U.S.C. 102 (e) as being anticipated by Hirota et al. (Hirota) (Patent Number 6,367,246 B1).*

Regarding claims 1-3, Hirota discloses a diesel engine exhaust system comprising: a soot filter (18); and low temperature NO<sub>2</sub> trap material comprising zeolites selected from the group consisting of acidic zeolites and base metal-exchanged zeolites, and wherein the low temperature NO<sub>2</sub> trap material is deposited on a carrier upstream and in train with the soot filter (See col. 3, lines 32-67; col. 4, lines 1-14).

Regarding claim 4, Hirota further discloses that the zeolites are selected from the group consisting of ZSM-5, ETS-10,  $\gamma$  zeolite, Beta zeolite, ferrierite, mordenite, titanium silicates, and aluminum phosphates (See col. 11, lines 5-47).

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Regarding claim 5, Hirota further discloses that the base metals are selected from the group consisting of Mn, Cu, Fe, Co, W, Re, Sn, Ag, Zn, Mg, Li, Na, K, Cs, Nd, Pr and combinations thereof (See col. 11, lines 5-47).

Regarding claim 13, Hirota further discloses that the soot filter comprises a ceramic monolithic structure having an upstream axial end and a downstream axial end, the structure having parallel flow channels with macroporous walls, wherein the channels having an opening at the upstream axial end are closed at the downstream axial end, and the channels having an opening at the downstream axial end are closed at the upstream axial end, thereby defining upstream and downstream sides of the channel walls (See col. 3, lines 32-67; col. 4, lines 1-14).

Regarding claim 14, Hirota further discloses a catalyst composition is deposited on the downstream side of the channel walls of the soot filter (See col. 3, lines 32-67; col. 4, lines 1-14).

Regarding claim 15, Hirota further discloses that the catalyst composition, deposited on the downstream side of the channel walls of the soot filter, comprises a lean NO<sub>x</sub> catalyst composition (See col. 3, lines 32-67; col. 4, lines 1-14).

Regarding claim 16, Hirota further discloses that the catalyst composition, deposited on the downstream side of the channel walls of the soot filter, comprises a catalyst composition effective for the combustion of unburned hydrocarbons and carbon monoxide (See col. 3, lines 32-67; col. 4, lines 1-14).

Regarding claims 17-18, and 21, Hirota discloses that method of treating a diesel exhaust stream containing NO<sub>2</sub> and unburned hydrocarbons, comprising: passing the exhaust stream through a diesel engine exhaust system comprising a soot filter (18) and low temperature NO<sub>2</sub> trap material deposited on a carrier upstream of the soot filter; adsorbing at least some of the NO<sub>2</sub> onto

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the low temperature NO<sub>2</sub> trap material and at least some of the unburned hydrocarbons onto the low temperature NO<sub>2</sub> trap material; heating the NO<sub>2</sub> trap material to desorb at least some of the adsorbed NO<sub>2</sub> and some of the unburned hydrocarbons from the low temperature NO<sub>2</sub> trap material; and oxidizing at least some of the unburned hydrocarbons with the desorbed NO<sub>2</sub> (See col. 5, lines 52-67; col. 6, lines 1-67; col. 7, lines 1-8).

Regarding claim 19, Hirota further discloses that the low temperature NO<sub>2</sub> trap material comprises zeolites selected from the group consisting of acidic zeolites and base-metal exchanged zeolites (See col. 3, lines 32-67; col. 4, lines 1-14).

Regarding claim 20, Hirota further discloses that the exhaust system further comprises a lean NO<sub>x</sub> catalyst deposited on the soot filter (See col. 3, lines 32-67; col. 4, lines 1-14).

***Claims 1-9, and 17-24 are rejected under 35 U.S.C. 102 (b) as being anticipated by Deeba et al. (Deeba) (Patent Number 6,093,378 ).***

Regarding claims 1-3, 17-18, and 20-21, Deeba discloses a diesel engine exhaust system comprising: a soot filter (Figs. 1-5); and low temperature NO<sub>2</sub> trap material comprising zeolites selected from the group consisting of acidic zeolites and base metal-exchanged zeolites, and wherein the low temperature NO<sub>2</sub> trap material is deposited on a carrier upstream and in train with the soot filter (See col. 9, lines 35-67; col. 10, lines 1-67; col. 11, lines 1-15).

Regarding claims 4 and 19, Deeba further discloses that the zeolites are selected from the group consisting of ZSM-5, ETS-10,  $\gamma$  zeolite, Beta zeolite, ferrierite, mordenite, titanium silicates, and aluminum phosphates (See col. 12, lines 1-67; col. 13, lines 1-18).

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Regarding claims 5 and 22-24, Deebea further discloses that the base metals are selected from the group consisting of Mn, Cu, Fe, Co, W, Re, Sn, Ag, Zn, Mg, Li, Na, K, Cs, Nd, Pr and combinations thereof (See col. 9, lines 35-67; col. 10, lines 1-67; col. 11, lines 1-15).

Regarding claim 6, Deebea further discloses that the zeolites comprise a trivalent metal which in combination with Si forms an oxidic skeleton (See col. 10, lines 5-67; col. 11, lines 1-45).

Regarding claim 7, Deebea further discloses that the trivalent metal comprises at least one metal selected from the group consisting of Al, B, Ga, In, Fe, Cr, V, As and Sb (See col. 10, lines 5-67; col. 11, lines 1-45).

Regarding claim 8, Deebea further discloses that the zeolites comprise three-dimensional alumina-silicate zeolites characterized by pore openings whose smallest cross-section dimensions are at least 5 Angstroms and having a silicon to alumina ratio of at least 5 (See col. 10, lines 5-67; col. 11, lines 1-45).

Regarding claim 9, Deebea further discloses that the zeolites comprise titanium silicates (See col. 12, lines 10-67; col. 13, lines 1-32).

***Claims 1-3, and 10-16 are rejected under 35 U.S.C. 102 (e) as being anticipated by Maaseidvaag et al. (Maaseidvaag) (Patent Number 6,167,696 B1).***

Regarding claims 1-3, Maaseidvaag discloses a diesel engine exhaust system comprising: a soot filter (22); and low temperature NO<sub>2</sub> trap material comprising zeolites selected from the group consisting of acidic zeolites and base metal-exchanged zeolites, and wherein the low temperature NO<sub>2</sub> trap material is deposited on a carrier upstream and in train with the soot filter (See Fig. 4; col. 6, lines 10-56).

Regarding claim 10, Maaseidvaag further discloses that the a diesel oxidation catalyst (16) upstream of the soot filter (22) (See Fig. 1).

Regarding claim 11, Maaseidvaag further discloses that the NO<sub>2</sub> trap material is deposited on a carrier that is interposed and in train with the diesel oxidation catalyst and the soot filter (See Fig. 4; col. 6, lines 10-56).

Regarding claim 12, Maaseidvaag further discloses that the comprising a canister, wherein the canister houses both the low temperature NO<sub>2</sub> trap material and the soot filter (See Fig. 4; col. 6, lines 10-56).

Regarding claim 13, Maaseidvaag further discloses that the soot filter comprises a ceramic monolithic structure having an upstream axial end and a downstream axial end, the structure having parallel flow channels with macroporous walls, wherein the channels having an opening at the upstream axial end are closed at the downstream axial end, and the channels having an opening at the downstream axial end are closed at the upstream axial end, thereby defining upstream and downstream sides of the channel walls (See Fig. 4; col. 6, lines 10-56).

Regarding claim 14, Maaseidvaag further discloses a catalyst composition is deposited on the downstream side of the channel walls of the soot filter (See Fig. 4; col. 6, lines 10-56).

Regarding claim 15, Maaseidvaag further discloses that the catalyst composition, deposited on the downstream side of the channel walls of the soot filter, comprises a lean NO<sub>x</sub> catalyst composition (See Fig. 4; col. 2, lines 26-67; col. 3, lines 1-50, col. 6, lines 10-56).

Regarding claim 16, Maaseidvaag further discloses that the catalyst composition, deposited on the downstream side of the channel walls of the soot filter, comprises a catalyst composition

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effective for the combustion of unburned hydrocarbons and carbon monoxide (See Fig. 4; col. 6, lines 10-56).

*Prior Art*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of five patents:

Kawamura (Patent Number 5682740), Matros et al. (Patent Number 6314722), Murachi et al. (Patent Number 5746989), Peter-Hoblyn (Patent Number 6051040), and Penetrante et al. (Patent Number 6038854) all disclose an exhaust gas purification for use with an internal combustion engine.


*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Binh Tran whose telephone number is (703) 305-0245. The examiner can normally be reached on Monday-Friday from 8:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reached on (703) 308-2623. The fax phone number for this group is (703) 746-4561.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0861.

BT  
April 03, 2003

  
Binh Tran  
Patent Examiner  
Art Unit 3748